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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,186	03/21/2006	Knut Schumacher	58948US002	4226

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EXAMINER

PINKNEY, DAWAYNE

ART UNIT	PAPER NUMBER
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2873

NOTIFICATION DATE	DELIVERY MODE
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10/18/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/595,186

Applicant(s)

SCHUMACHER ET AL.

Examiner

DaWayne A. Pinkney

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03/21/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>09/18/2006</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 09/18/2006 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 3-12, 14-15, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Bechinger et al. (US 6, 369, 934).

Regarding **claim 1**, Bechinger discloses, electrochemical display device capable of irreversibly switching from a first indicating state to a second indicating state, said device comprising:

a substrate (12) (Column 5, lines 32-35, and 26 of Fig. 2) having an electrically insulating surface (16) (30 of Fig. 2),

a first electrode (30) located on at least a part of said surface (16) of said substrate (12) (12 of Fig. 2),

wherein said substrate (12), at least within said part of its surface (16) is light-transmissive (24 of Fig. 2), the transmissivity of the combination of said substrate (12) and said first electrode (30) being less than that of said part of said substrate (12) (30 of Fig. 2; note that 30 of Fig. 2 is less transmissive than 24 of Fig. 2 because of 26 of Fig. 2 does not allow all of the light to be transmitted through, therefore, 30 is less transmissive than 24),

a second electrode (32) (14 of Fig. 2), and

an electrolytic liquid (28) arranged between and in electrical contact with said first and second electrodes (30,32) (22 of Fig. 2),

wherein, upon application of an electrical voltage to said first and second electrodes (30,32), material of said first electrode (30) dissolves into said electrolytic liquid (28) exposing at least partially said substrate (12) thereby switching from the first indicating state to the second indicating state (Column 5, lines 66-67, Column 6, lines 1-6, and Column 8, lines 7-18).

Regarding **claim 3**, Bechinger discloses, electrochemical display device according to claim 1, further comprising at least one porous element (54) soaked with the electrolytic liquid (28) and arranged between said first and second electrodes (30,32) (Column 5, lines 59-63, and 18 of Fig. 2).

Regarding **claim 4**, Bechinger discloses, electrochemical display device according to claim 3, wherein the porous element (54) comprises a nonwoven layer (Column 5, lines 59-63, and 18 of Fig. 2).

Regarding **claim 5**, Bechinger discloses, electrochemical display device according to claim 1, wherein said substrate (12) comprises at least one electrically-conductive lead connected to said first electrode (30) (Column 8, lines 7-18, and 44, 48 of Fig. 2).

Regarding **claim 6**, Bechinger discloses, electrochemical display device according to claim 1, wherein said first electrode (30) comprises a metal layer (18) coated onto said substrate (12) (Column 5, lines 36-55, and 12 of Fig. 2).

Regarding **claim 7**, Bechinger discloses, electrochemical display device according to claim 1, wherein said second electrode (32) is located on a further substrate (20) (14 of Fig. 2).

Regarding **claim 8**, Bechinger discloses, electrochemical display device according to claim 1, wherein at least one of the substrates (12,20) comprises at least one electrically conductive lead (42,44) and connected to the respective electrode (32) (Column 8, lines 7-18, and 46, 50 of Fig. 2).

Regarding **claim 9**, Bechinger discloses, electrochemical display device according to claim 8, wherein at least one of the electrodes (30,32) comprises a metal layer (18) coated onto said respective substrate (12,20) (Column 5, lines 36-55, and 14 of Fig. 2).

Regarding **claim 10**, Bechinger discloses, electrochemical display device according to claim 9, wherein at least one of the substrates (12,20) comprises at least one recess (26) filled with the electrolytic liquid (28) and having side and bottom walls on at least one of which the respective electrode (32) is arranged (Column 5, lines 36-39, Column 7, lines 21-34, and Fig. 2).

Regarding **claim 11**, Bechinger discloses, electrochemical display device according to claim 1, wherein said substrate (12), or said further substrate (20) if provided, comprises a synthetic film material (Column 5, lines 19-20, Column 5, lines 31-35, and 26, 28 of Fig. 2).

Regarding **claim 12**, Bechinger discloses, electrochemical display device according to claim 1, wherein said electrolytic liquid (28) is at least partially surrounded by an evaporation barrier (Column 5, lines 23-28, and Column 7, lines 19-34).

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Regarding **claim 14**, Bechinger discloses, electrochemical display device according to claim 1, comprising:

an electrically insulating first substrate layer (12) (Column 5, lines 32-35, and 26 of Fig. 2) forming said substrate and metallized for providing said first electrode (30) (Column 5, lines 36-55, and 12 of Fig. 2),

an electrically insulating second substrate layer (20) (Column 5, lines 32-35, and 28 of Fig. 2) metallized for providing said second electrode (32) (Column 5, lines 36-55, and 14 of Fig. 2),

a porous pad (54) (Column 5, lines 59-63, and 18 of Fig. 2) soaked with said electrolytic liquid (28) (22 of Fig. 2) and located between said substrate layers (12,20) (Column 5, lines 59-63, and 18 of Fig. 2), and

an electrically non-conductive seal (56) arranged around said porous pad (54) (Column 5, lines 23-28, Column 7, lines 19-34, and 13 of Fig. 2),

wherein said substrate layers (12,20) are spaced and electrically isolated from each other by said non-conductive seal (56) (Column 5, lines 23-28, Column 7, lines 19-34, and 13 of Fig. 2).

Regarding **claim 15**, Bechinger discloses, electrochemical display device according to claim 14, wherein said second substrate layer (20) comprises an electrically conductive path (44) insulated from said second electrode (32) and in electrical contact with said first electrode (30) of said first substrate layer (12) (Column 8, lines 7-29, and 44, 46, 48, and 50 of Fig. 2).

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Regarding **claim 18**, Bechinger discloses, electrochemical display device according to claim 1, wherein said seal (56) comprises bonding material such as adhesive material or heat seal material (Column 5, lines 23-28, Column 7, lines 19-34, and 13 of Fig. 2).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 13, and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bechinger et al. (US 6, 369, 934) as applied to claim 1 above.

The cited primary reference, Bechinger, remains as applied to **claim 1 above**.

Furthermore, Bechinger discloses, a first electrode (30) (12 of Fig. 2) being in electrical contact with a second electrode (32) (14 of Fig. 2) through the electrolytic liquid (28) (Column 7, lines 32-40, Column 8, lines 7-28, and Fig. 2).

Although, the cited primary reference does not teach the electrochemical display device comprises several first electrodes (30) or several second electrodes (32), it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the first electrode or the second electrode comprise several electrodes because this is a feature that is known in the art. The several electrodes can be obtained by taking the single electrode as disclosed by Bechinger, and breaking this electrode into several smaller electrodes (duplication of parts), this is known to one of ordinary skill in the art, and it would allow the display device to have a more uniform electric field applied across it.

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Regarding **claim 13**, although Bechinger does not disclose that the electrolytic liquid is colored, it would have been obvious to one of ordinary skill in the art at the time the invention was made to color the electrolytic liquid because this would allow the electrochemical display device to display a desired color regardless of whether or not the electrochemical display device is off or on.

Regarding **claims 16-17**, Bechinger discloses, a first electrode (30) (12 of Fig. 2) being in electrical contact with a second electrode (32) (14 of Fig. 2) through the electrolytic liquid (28) (Column 7, lines 32-40, Column 8, lines 7-28, and Fig. 2), a porous pad (54) soaked with electrolytic liquid (26) (Column 5, lines 59-63, and 18 of Fig. 2) that is surrounded by a seal (56) (Column 5, lines 23-28, Column 7, lines 19-34, and Fig. 2), and the substrate layer covers the arrangement of the porous pad (Column 5, lines 23-35, and Fig. 2).

Bechinger discloses the claimed invention except for the first substrate and the second substrate layers are provided with several electrodes and several porous pads. It would have been obvious to one of ordinary skill in the art at the time the invention was made to make provide several electrodes and porous pads on the first substrate and the second substrate layers, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

6. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bechinger et al. (US 6, 369, 934) as applied to claim 1 above, in view of Agrawal et al. (US 6, 795, 226).

The cited primary reference, Bechinger, remains as applied to **claim 1 above**.

The cited primary reference does not teach the substrate (12) comprises at least two parallel first channels (82) being open to one side of the substrate (12), each of said first channels (82) having a surface provided with a first electrode (30) extending along said first channel (82), a second substrate (20) comprises at least two parallel second channels (84) being open to one side of the second substrate (20) facing said first substrate (12), each of said second channels (48) having a surface provided with a second electrode (32) extending along said second channel (84), wherein said substrates (12,20) are arranged such that the first and second channels (82,84) are facing and crossing each other, wherein said first and second channels (82,84) are filled with the electrolytic liquid (28), and wherein, upon application of said voltage to one of said first electrodes (20) and one of said second electrodes (32), material of said one first electrode (30) dissolves into said electrolytic liquid (28) in the region in which the first associated channel (82) crosses the associated second channel (84).

The added secondary reference, Agrawal teaches, from the same field of endeavor, an electrochemical device, wherein the substrate (12) comprises at least two parallel first channels (82) being open to one side of the substrate (12) (Column 12, lines 11-23, and 47, 48 of Fig. 3B), each of said first channels (82) having a surface provided with a first electrode (30) extending along said first channel (82) (Column 12, lines 11-23, and 32, 34 of Fig. 3B), a second substrate (20) comprises at least two parallel second channels (84) being open to one side of the second substrate (20) facing said first substrate (12) (Fig. 3B), each of said second channels (48) having a surface provided with a second electrode (32) extending along said second channel (84) (29 of Fig. 3B), wherein said substrates (12,20) are arranged such that the first and second channels (82,84) are facing and crossing each other, wherein said first and second channels (82,84) are

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filled with the electrolytic liquid (28), and wherein, upon application of said voltage to one of said first electrodes (20) and one of said second electrodes (32), material of said one first electrode (30) dissolves into said electrolytic liquid (28) in the region in which the first associated channel (82) crosses the associated second channel (84) (Column 2, lines 34-45, and Column 12, lines 11-23) for the purpose of this allows the display device to change states faster (Column 12, lines 16-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the device structure as taught by the electrochemical device of Agrawal in the electrochemical display device of Bechinger since Agrawal teaches it is well known to use these features in an electrochemical device for allowing the display device to change states faster (Column 12, lines 16-17).

7. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bechinger et al. (US 6, 369, 934) as applied to claim 1 above, in view of Morita (US 4, 253, 742).

The cited primary reference, Bechinger, remains as applied to **claim 1 above**.

The cited primary reference does not teach an electrochemical display device in which the distance between a first electrode (30) and a second electrode (32) varies, and at least one of the facing electrode surfaces (30,32) is arcuate.

The added secondary reference, Morita teaches, that in a electrochemical display device having a substrate, first and second electrodes, an electrolytic liquid which switches between states with the application of a voltage that it would be desirable to for the distance between a first electrode (30) and a second electrode (32) varies (12' and 16 of Fig. 2), and at least one of

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the facing electrode surfaces (30,32) is arcuate (16 of Fig. 2) for the purpose of this provides enhanced contrast (Column 4, lines 42-43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the electrochemical display device configuration as taught by the electrochemical display device of Morita with the electrochemical display device of Bechinger since Morita teaches it is well known to use these features for providing enhanced contrast (Column 4, lines 42-43).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Reynolds et al. (US 2003/0174371) teaches an electrochemical display device having substrates, a first electrode, a second electrode, and an electrolytic liquid.

Takude (US 4,702, 566) teaches an electrochemical display device having substrates, a first electrode, a second electrode, and an electrolytic liquid.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DaWayne A. Pinkney whose telephone number is (571) 270-1305. The examiner can normally be reached on Monday-Thurs. 8 a.m.- 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on (571) 272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Danaye A. Pin
DAP
09/25/2007

Scott J. Sugarman
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Primary Examiner